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## CLAIMS

1. An antenna directivity enhancer to enhance the directivity of an antenna comprising:  
a 3-dimensional structure in a predefined 3-dimensional shape when operating to enhance the  
directivity of the antenna;

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wherein

the 3-dimensional structure can be flexibly collapsed into 2-dimensional flat surfaces, with at  
least two of the surfaces not required to have any space in between them when the structure is  
collapsed; and

the direction where the directivity is enhanced can be changed as desired.

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2. An antenna directivity enhancer as recited in Claim 1 wherein  
the enhancer includes four surfaces;  
at least two surfaces are reflecting surfaces; and  
when the enhancer is in its predefined 3-dimensional shape,

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the two reflecting surfaces are substantially orthogonal to each other,  
one other surface can be above the two reflecting surfaces, and  
the other surface can be below the two reflecting surfaces.

3. An antenna directivity enhancer as recited in Claim 2 wherein both the surface above and  
the surface below are also reflecting surfaces.

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4. An antenna directivity enhancer as recited in Claim 2 wherein when the enhancer is in its  
predefined 3-dimensional shape, the surface above is upwardly tilted.

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5. An antenna directivity enhancer as recited in Claim 2 wherein when the enhancer is in its  
predefined 3-dimensional shape, the surface below is downward tilted.

6. An antenna directivity enhancer as recited in Claim 2 wherein:  
each of the surface above and the surface below has a hole; and

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when the enhancer is in its predefined 3-dimensional shape to enhance the directivity of the  
antenna,

5                   the distance between the center of the two holes and the line the two reflecting  
surfaces intersect is more than about 0.25 times of the wavelength of the radiation of the  
antenna;

                  the enhancer includes a tube that is positioned by the two holes; and  
                  the antenna is located inside the tube.

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7.       An antenna directivity enhancer as recited in Claim 6 further includes a grommet to improve  
the attachment between the enhancer and the antenna.

8.       An antenna directivity enhancer as recited in Claim 2 wherein when the enhancer is in its  
15 predefined 3-dimensional shape, the flatness of the surface above and the surface below are  
enhanced by clips.

9.       An antenna directivity enhancer as recited in Claim 2 wherein when the enhancer is  
collapsed, the 2-dimensional flat surfaces are connected.

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10.      An antenna directivity enhancer as recited in Claim 2 wherein when the enhancer is  
collapsed, the two reflecting surfaces are substantially in contact.

11.      An antenna directivity enhancer as recited in Claim 2 wherein the enhancer is less than 4  
25 ounces in weight.

12.      An antenna directivity enhancer as recited in Claim 2 wherein all of the major dimensions of  
the enhancer is less than 30 centimeters.

30 13.      An antenna directivity enhancer as recited in Claim 1 wherein when the enhancer is in its  
predefined 3-dimensional shape, the enhancer only has one flat reflecting surface.

14.      An antenna directivity enhancer as recited in Claim 1 wherein when the enhancer is in its  
predefined 3-dimensional shape, it has one curved reflecting surface.

- 5 15. An antenna directivity enhancer as recited in Claim 14 wherein the curved reflecting surface is parabolic in shape.
16. An antenna directivity enhancer as recited in Claim 1 wherein when collapsed, the 2-dimensional flat surfaces are not connected together.
- 10 17. An antenna directivity enhancer as recited in Claim 1 wherein the enhancer is inflatable and can be inflated to form its predefined 3-dimensional shape.
18. An antenna directivity enhancer as recited in Claim 1 wherein the position of the enhancer  
15 relative to the antenna can be fixed.
19. An antenna directivity enhancer as recited in Claim 1 wherein  
the antenna is for establishing connection to a different antenna; and  
the position of the enhancer relative to the antenna can be automatically calibrated to  
20 maximize the signal strength of the connection.
20. An antenna directivity enhancer as recited in Claim 19 wherein the calibration process takes  
into consideration that there can be at least one position of the enhancer relative to the  
antenna where there is no connection.
- 25 21. An antenna directivity enhancer as recited in Claim 1 wherein the external 3-dimensional  
structure of the enhancer is different from the pre-defined 3-dimensional shape of the  
enhancer.
- 30 22. An antenna directivity enhancer as recited in Claim 1 wherein when the enhancer is in its  
predefined 3-dimensional shape to enhance the directivity of the antenna,  
the enhancer includes a tube;  
the antenna is located in the tube; and  
the tube cannot be seen when the enhancer is viewed from the outside.
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- 5     23.     An antenna directivity enhancer as recited in Claim 1 wherein the antenna is for a wireless router.
24.     An antenna directivity enhancer as recited in Claim 1 wherein the antenna is for a wireless card.
- 10     25.     An antenna directivity enhancer as recited in Claim 1 wherein the antenna is embedded inside a device.
26.     An antenna directivity enhancer as recited in Claim 1 wherein:
- 15     the antenna is for establishing connection to a different antenna; and  
the different antenna also has an antenna directivity enhancer.
27.     An antenna directivity enhancer as recited in Claim 1 wherein:
- 20     the antenna is for establishing connection to a second antenna; and  
the connection is established through a third antenna.
28.     An antenna directivity enhancer to enhance the directivity of an antenna comprising:  
a 3-dimensional structure in a predefined 3-dimensional shape when operating to enhance the  
directivity of the antenna;
- 25     wherein  
the 3-dimensional structure can be flexibly collapsed into 2-dimensional flat surfaces, with the  
angle subtended between two of the surfaces reduced at least by a factor of four when the structure  
is collapsed; and  
the direction where the directivity is enhanced can be changed as desired.
- 30     29.     A collapsible antenna enhancing device, comprising:  
an extended configuration forming a predetermined three-dimensional arrangement of a  
plurality of sides, at least one of the sides providing a reflective surface for electromagnetic  
radiation; and
- 35     a compressed configuration suitable for storage or shipment in which the plurality of sides  
collapse down to a substantially two-dimensional arrangement,

5            wherein said collapsible antenna enhancing device can return to said extended configuration  
from said compressed configuration and vice versa.

30.    A collapsible antenna enhancing device as recited in Claim 29 wherein said collapsible  
antenna enhancing device is less than 6 ounces in weight.

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31.    A collapsible antenna enhancing device as recited in Claim 29 wherein at least one of the  
side contains an advertisement.

32.    A collapsible antenna enhancing device as recited in Claim 29 further comprising at least  
15 one opening in at least one of the sides to receive an antenna to be enhanced.

33.    A collapsible antenna enhancing device as recited in Claim 29 wherein said collapsible  
antenna enhancing device has a focal point, and the opening being positioned at the focal point.

20 34.    A collapsible antenna enhancing device as recited in Claim 29 further comprising at least  
one opening in at least one of the sides to receive a port connector.

35.    A collapsible antenna enhancing device as recited in Claim 34 further comprising means to  
hold said port connector.

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36.    A collapsible antenna enhancing device as recited in Claim 34 further comprising the port  
connector.

37.    An antenna enhancing device, comprising:

30            a primary configuration having a predetermined three-dimensional arrangement of a  
plurality of sides, at least one of the sides providing a reflective surface for electromagnetic  
radiation to enhance the performance of the antenna; and

          at least one additional side that lacks a reflecting surface and that provides an external  
surface for said primary configuration;

35            wherein

5           the at least one additional side is substantially transparent to said electromagnetic radiation;  
and the at least one additional side is not for enhancing the performance of the antenna.

38.    An antenna enhancing device as recited in Claim 37 wherein said primary configuration has  
an opening of said antenna enhancing device, and wherein said at least one additional side covers  
10   the opening of said antenna enhancing device.

39.    An antenna enhancing device as recited in Claim 37 wherein said at least one additional side  
produces an external configuration for said antenna enhancing device, and wherein the external  
configuration differs from said primary configuration.  
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